CLAIMS 1-9 cancelled by amendment on July 19, 2002, originally in US Ser. No. 09/840,503

1. (CANCELED) A method of treating inosine monophosphate dehydrogenase associated disorders comprising: administering a therapeutically effective amount of a compound of formula (I)

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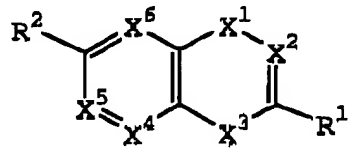

(I)

including isomers, enantiomers, diastereomers, tautomers, pharmaceutically acceptable salts, prodrugs and solvates thereof wherein:

X^1 is C=O, -S(O)-, or $-S(O)_2-$;

X^2 is CR^3 or N;

X^3 is–NH-, -O-, or –S-;

X^4 is CR^4 or N;

X^5 is CR^5 or N;

X^6 is CR^6 or N;

R^1 is alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, NR^8R^9, SR^{20}, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, heterocycloalkyl, or heteroaryl;

R^2 is halogen, cyano, nitro, hydroxy, oxo (double bond is no longer present between CR^2 and X^6), SR^7, $S(O)R^7$, SO_2R^7, $SO_2NR^8R^9$, CO_2R^7, $C(O)NR^8R^9$, or heteroaryl;

R^3 is hydrogen, hydroxy, halogen, cyano, CO_2R^7, NR^8R^9, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, heterocycloalkyl or heteroaryl;

R^4, R^5, and R^6 are independently selected from the group consisting of hydrogen, halogen, nitro, cyano,

O-R^7, NR^8R^9, SR^7, $S(O)R^7$, SO_2R^7, SO_3R^7, $SO_2NR^8R^9$, CO_2R^7, $C(O)NR^8R^9$, C(O)alkyl, C(O)substituted alkyl, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl and substituted alkynyl;

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R^7, R^{10}, and R^{11}, are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, alkynyl, cycloalkyl, substituted cycloalkyl, C(O)alkyl, C(O)substituted alkyl, C(O)cycloalkyl, C(O) substituted cycloalkyl, C(O)aryl, C(O)substituted aryl, C(O)Oalkyl, C(O)Osubstituted alkyl, C(O)heterocycloalkyl, C(O)heteroaryl, aryl, substituted aryl, heterocycloalkyl and heteroaryl;

R^8 and R^9 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, alkenyl, alkynyl, C(O)alkyl, C(O)substituted alkyl, C(O)cycloalkyl, C(O)substituted cycloalkyl, C(O)aryl, C(O)substituted aryl, C(O)Oalkyl, C(O)Osubstituted alkyl, C(O)heterocycloalkyl, C(O)heteroaryl, aryl, substituted aryl, heterocycloalkyl, and heteroaryl or R^8 and R^9 taken together with the nitrogen atom to which they are attached complete a heterocycloalkyl or heteroaryl ring;

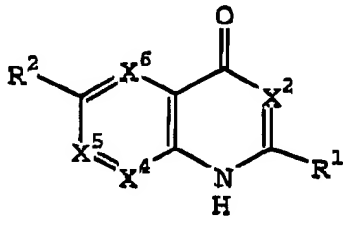
R^{20} is alkyl, substituted alkyl, cycloalkyl, aryl, substituted aryl, heteroaryl or heterocycloalkyl;

R^3 and R^1 may be taken together with the carbon atoms to which they are attached to form a monocyclic or substituted monocyclic ring system of 5 or 6 carbon atoms; and

R^4 and R^5 may be joined together by the chain

$-O-CH_2-O-$ or $-O-CH_2-CH_2-O-$.

2. (CANCELED) A method of claim 1 comprising: administering a therapeutically effective amount of a compound of formula (II)



(II)

including isomers, enantiomers, diastereomers, tautomers, pharmaceutically acceptable salts, prodrugs and solvates thereof wherein:

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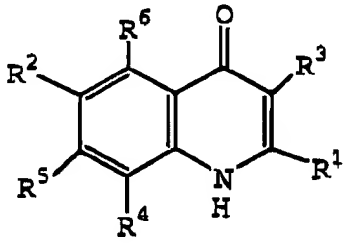
R^2 is a monocyclic substituted or unsubstituted heteroaryl group.

3. (CANCELED)A method of claim 2 comprising; administering a therapeutically effective amount of a compound of formula (III)



(III)

including isomers, enantiomers, diastereomers, tautomers, pharmaceutically acceptable salts, prodrugs and solvates thereof wherein:

R^2 is 4-oxazolyl, substituted 4-oxazolyl, 5-oxazolyl, or substituted 5-oxazolyl;

R^3 is hydrogen, hydroxy, NR^8R^9, alkyl of 1 to 4 carbons, alkenyl of 2 to 4 carbons, alkynyl of 2 to 4 carbons, substituted alkyl of 1 to 4 carbons, phenyl, substituted phenyl, cycloalkyl of 5 to 7 carbons, substituted cycloalkyl of 5 to 7 carbons, monocyclic heterocycloalkyl and monocyclic heteroaryl;

R^4 is hydrogen, halogen, nitro, hydroxy, alkyl of 1 to 4 carbons, cyano, CF_3, OCF_3, OCH_3, SCH_3, $S(O)CH_3$, or $S(O)_2CH_3$;

R^5 is hydrogen, halogen, nitro, hydroxy, alkyl of 1 to 4 carbons, cyano, vinyl, CF_3, CF_2CF_3, $CH{=}CF_2$, OCH_3, OCF_3, $OCHF_2$, SCH_3, $S(O)CH_3$, or $S(O)_2CH_3$; and

R^6 is hydrogen, halogen, nitro, hydroxy, alkyl of 1 to 4 carbons, cyano, CF_3, OCH_3, OCF_3, SCH_3, $S(O)CH_3$, and $S(O)_2CH_3$.

4. (CANCELED)A method of Claim 3 comprising: administering a therapeutically effective amount of a compound including isomers, enantiomers, diastereomers, tautomers, pharmaceutically acceptable salts, prodrugs and solvates

wherein:

R^2 is 4-oxazolyl, substituted 4-oxazolyl, 5-oxazolyl, substituted 5-oxazolyl or heteroaryl;

R^3 is hydrogen, hydroxy, halogen, methyl or NR^8R^9;

R^4 is hydrogen;

R^5 is halogen, methyl, ethyl, substituted alkenyl, alkyne, OMe or OCF_3; and

R^6 is hydrogen.

5. (CANCELED)A method of Claim 4 comprising: administering a therapeutically effective amount of a compound including isomers, enantiomers, diastereomers, tautomers, pharmaceutically acceptable salts, prodrugs and solvates
wherein:

R^2 is 4-oxazolyl, substituted 4-oxazolyl, 5-oxazolyl or substituted 5-oxazolyl;

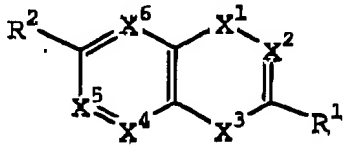
R^3 is hydrogen, hydroxy, halogen or methyl;

R^4 is hydrogen;

R^5 is halogen, methyl or OMe; and

R^6 is hydrogen.

6. (CANCELED)A method of treating inosine monophosphate dehydrogenase associated disorders comprising: administering a therapeutically effective amount of a phosphodiesterase Type 4 inhibitor and a compound of formula (X):



(X)

including isomers, enantiomers, diastereomers, tautomers, pharmaceutically acceptable salts, prodrugs and solvates thereof wherein:

X^1 is C=O, -S(O)-, or $-S(O)_2-$;

X^2 is CR^3 or N;

X^3 is–NH-, -O-, or –S-;

X^4 is CR^4 or N;

D1 X^5 is CR^5 or N;

X^6 is CR^6 or N;

R^1 is alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, NR^8R^9, SR^{20}, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, heterocycloalkyl, or heteroaryl;

R^2 is halogen, cyano, nitro, hydroxy, oxo (double bond is no longer present between CR^2 and X^6), SR^7, $S(O)R^7$, SO_2R^7, $SO_2NR^8R^9$, CO_2R^7, $C(O)NR^8R^9$, or heteroaryl;

R^3 is hydrogen, hydroxy, halogen, cyano, CO_2R^7, NR^8R^9, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, heterocycloalkyl or heteroaryl;

R^4, R^5, and R^6 are independently selected from the group consisting of hydrogen, halogen, nitro, cyano,
O-R^7, NR^8R^9, SR^7, $S(O)R^7$, SO_2R^7, SO_3R^7, $SO_2NR^8R^9$, CO_2R^7, $C(O)NR^8R^9$, C(O)alkyl, C(O)substituted alkyl, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl and substituted alkynyl;

R^7, R^{10}, and R^{11}, are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, alkynyl, cycloalkyl, substituted cycloalkyl, C(O)alkyl, C(O)substituted alkyl, C(O)cycloalkyl, C(O) substituted cycloalkyl, C(O)aryl, C(O)substituted aryl,C(O)Oalkyl, C(O)Osubstituted alkyl, C(O)heterocycloalkyl, C(O)heteroaryl, aryl, substituted aryl, heterocycloalkyl and heteroaryl;

R^8 and R^9 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, alkenyl, alkynyl, C(O)alkyl, C(O)substituted alkyl, C(O)cycloalkyl, C(O)substituted cycloalkyl, C(O)aryl, C(O)substituted aryl, C(O)Oalkyl, C(O)Osubstituted alkyl, C(O)heterocycloalkyl, C(O)heteroaryl, aryl, substituted aryl, heterocycloalkyl, and heteroaryl or R^8 and R^9 taken together with the nitrogen atom to which they are attached complete a heterocycloalkyl or heteroaryl ring;

R^{20} is alkyl, substituted alkyl, cycloalkyl, aryl, substituted aryl, heteroaryl or heterocycloalkyl;

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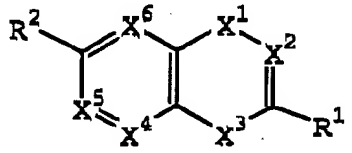
R^3 and R^1 may be taken together with the carbon atoms to which they are attached to form a monocyclic or substituted monocyclic ring system of 5 or 6 carbon atoms; and

R^4 and R^5 may be joined together by the chain –O-CH_2-O- or -O-CH_2-CH_2-O-.

7. (CANCELED)A method for the treatment or prevention of allograft rejection comprising; administering a therapeutically effective amount of a phosphodiesterase Type 4 inhibitor and a compound of formula (X):



(X)

including isomers, enantiomers, diastereomers, tautomers, pharmaceutically acceptable salts, prodrugs and solvates thereof wherein:

X^1 is C=O, -S(O)-, or –$S(O)_2$-;

X^2 is CR^3 or N;

X^3 is –NH-, -O-, or –S-;

X^4 is CR^4 or N;

X^5 is CR^5 or N;

X^6 is CR^6 or N;

R^1 is alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, NR^8R^9, SR^{20}, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, heterocycloalkyl, or heteroaryl;

R^2 is halogen, cyano, nitro, hydroxy, oxo (double bond is no longer present between CR^2 and X^6), SR^7, $S(O)R^7$, SO_2R^7, $SO_2NR^8R^9$, CO_2R^7, $C(O)NR^8R^9$, or heteroaryl;

R^3 is hydrogen, hydroxy, halogen, cyano, CO_2R^7, NR^8R^9, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl, substituted alkynyl, cycloalkyl, substituted cycloalkyl, aryl, substituted aryl, heterocycloalkyl or heteroaryl;

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R^4, R^5, and R^6 are independently selected from the group consisting of hydrogen, halogen, nitro, cyano,
O-R^7, NR^8R^9, SR^7, $S(O)R^7$, SO_2R^7, SO_3R^7, $SO_2NR^8R^9$, CO_2R^7, $C(O)NR^8R^9$, C(O)alkyl, C(O)substituted alkyl, alkyl, substituted alkyl, alkenyl, substituted alkenyl, alkynyl and substituted alkynyl;

R^7, R^{10}, and R^{11}, are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, alkenyl, alkynyl, cycloalkyl, substituted cycloalkyl, C(O)alkyl, C(O)substituted alkyl, C(O)cycloalkyl, C(O) substituted cycloalkyl, C(O)aryl, C(O)substituted aryl, C(O)Oalkyl, C(O)Osubstituted alkyl, C(O)heterocycloalkyl, C(O)heteroaryl, aryl, substituted aryl, heterocycloalkyl and heteroaryl;

R^8 and R^9 are independently selected from the group consisting of hydrogen, alkyl, substituted alkyl, cycloalkyl, substituted cycloalkyl, alkenyl, alkynyl, C(O)alkyl, C(O)substituted alkyl, C(O)cycloalkyl, C(O)substituted cycloalkyl, C(O)aryl, C(O)substituted aryl, C(O)Oalkyl, C(O)Osubstituted alkyl, C(O)heterocycloalkyl, . C(O)heteroaryl, aryl, substituted aryl, heterocycloalkyl, and heteroaryl or R^8 and R^9 taken together with the nitrogen atom to which they are attached complete a heterocycloalkyl or heteroaryl ring;

R^{20} is alkyl, substituted alkyl, cycloalkyl, aryl, substituted aryl, heteroaryl or heterocycloalkyl;

R^3 and R^1 may be taken together with the carbon atoms to which they are attached to form a monocyclic or substituted monocyclic ring system of 5 or 6 carbon atoms; and

R^4 and R^5 may be joined together by the chain
$-O-CH_2-O-$ or $-O-CH_2-CH_2-O-$.

8. (CANCELED)A method of Claim 6 wherein: the phosphodiesterase Type 4 inhibitor is Rolipram.

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9. (CANCELED)A method of Claim 6 wherein: the phosphodiesterase Type 4 inhibitor is [4-[3-(cyclopentyloxy)-4-methoxy-phenyl]-2-pyrrolidinone].